

How a heifer microbiome impacts her calf and the environment.

Page 10

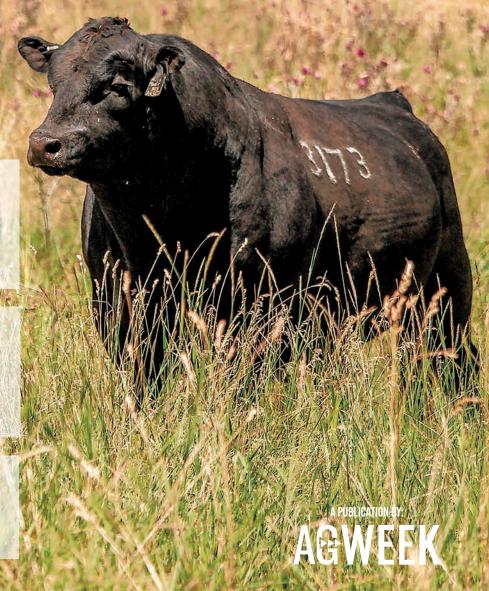
SUCCESSFUL WEANING:

Should you precondition your calves?

Page 14

BULL BASICS:

When should you replace a bull? Page 24



BULL SALE GUIDE

Serving The Nation's Bull Sale Community Since 1985

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CONTENTS

FEATURED

- **COULD RYE BE A COST-SAVING FEEDSOURCE?**BY ARIANA SCHUMACHER
- 8 WHAT CAN YOU DO TO PREVENT CALF SCOURS?
 BY MICHAEL JOHNSON
- 10 THE RESEARCH INTO THE IMPACTS OF THE MICROBIOME BY JEFF BEACH
- 12 CONTROLLING ANTHRAX IN CATTLE HERDS BY ANN BAILEY
- 14 HOW PRECONDITIONING CAN INCREASE CALF VALUE BY ARIANA SCHUMACHER
- 18 A LOOK AT THE LONG-LASTING EFFECTS OF MINERAL SUPPLEMENTATION BY JEFF BEACH
- 20 WHY BEDDING MATTERS
 BY ANN BAILEY
- 22 A GUIDE TO IMPLANTS AND NEW REGULATIONS BY JENNY SCHLECHT
- 24 HOW TO KNOW WHEN TO REPLACE A BULL BY MICHAEL JOHNSON
- **26** MULTI-CONTINENT RESEARCH TAKES ON COMMINGLING BY NOAH FISH
- 29 WEANED CALF INSURANCE OPEN TO SOUTH DAKOTA RANCHERS BY ARIANA SCHUMACHER
- 31 MARKET LESSONS TO CONSIDER TO PROTECT YOURSELF BY JENNY SCHLECHT
- 33 EXPLORING THE NEW FRONTIER OF VIRTUAL FENCES BY JENNY SCHLECHT
- 35 WHAT BEEF QUALITY ASSURANCE COULD MEAN FOR YOUR HERD BY NOAH FISH

ON THE COVER

Photo Credit: Grand Vale Creative LLC





WELCOME TO THE

AGWEEK BULL SALE GUIDE

No matter what segment of the cattle industry you work in, this is a busy time of year in the northern Plains and upper Midwest.

Here in the northern region, producers are well into the feeding season, whether they're feeding weaned calves or breeding cattle. There's bedding to be put down and vaccines to be given. In some places and some times, there's snow to be pushed. Calving is just around the corner.

Another important job for this time of year is evaluation of the bull pen for cow-calf producers. It's time to make sure the bulls you've kept from last season are still ready to do their job this spring and summer. Are they healthy? Have you gotten them tested? Are their genetics still the ones you want to propel your herd forward? If you need help making that decision, we've got a story within these pages just for you.

You'll also see advertisements for bull sellers throughout the region who can help fulfill your bull needs. Instead of saving leaflets of various ranches to evaluate, you can find numerous ranches, all in one place, that may have the bull you're looking for.

In addition to highlighting those ranches, this publication contains a multitude of information on topics important to any cattle producer. We have articles on how what you feed to your heifers during breeding season can impact your herd for generations, on different feeding ideas for your herd, on health and management practices that can impact your cattle, and on what current research is exploring that may illuminate new ideas in the future.

At Agweek, we have a long history of providing farmers and ranchers information they can put to work to help make their operations strong into the future. In offering this first ever Bull Sale Guide, we want to provide cattle producers with information and ideas to improve their ranch as well as connections to seedstock producers who can help boost a herd's genetics.

If you enjoy what you find in this free magazine, I'd also encourage you to visit agweek.com, where you can find more reporting on the business of agriculture and the policies that impact it. We proudly report everything from farm to fork and strive to report the news of rural America that you won't find anywhere



JENNY SCHLECHT

Ag Content Director Bull Sale Guide

Jenny Schlecht is the director of ag content for Agweek and serves as editor of Agweek, Sugarbeet Grower, BeanGrower and Bull Sale Guide. She grew up on an Angus ranch in Montana and now lives on a farm and ranch near Medina, North Dakota, with her husband and two daughters. You can reach her at jschlecht@agweek.com or 701-595-0425.

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Thank you for reading, and please let us know what you think! If you want to receive this magazine next year, please subscribe to Agweek. Make sure to tune into AgweekTV and read agweek. com for our upcoming 2024 Agweek Livestock Tour.

Pictured Above: Bull sale season is upon us, and it's important to make sure you have all the information you need when replacing bulls. Jenny Schlecht / Agweek file photo



Rye that was swathed in early August lays in a windrow north of Buffalo, North Dakota, on Aug. 8, 2022. **Jeff Beach / Agweek**

FOR CATTLE DIETS?

BY ARIANA SCHUMACHER | AGWEEK

WATERTOWN, S.D. – Researchers at South Dakota State University Extension have been conducting experiments to see if hybrid rye is a suitable feed source for cattle. It is used as an alternative source of starch in finishing or growing cattle diets.

"Certainly, corn has been a cornerstone feed ingredient. We know how to do that, and it works exceptionally well. But there are some opportunities and some reasons to incorporate additional crops into our corn and soybean rotation from a disease standpoint, pest pressure and so forth," said Warren Rusche, livestock feedlot management specialist with SDSU Extension. "Hybrid rye or rye grain in general could be one of those."

Hybrid rye is typically priced at about 80-85% of the value of corn.

"So, if we can use a cheaper feedstuff for part of the diet and get similar performance, what we are doing is we are reducing cost of gain and cost of production. That's going to help out in terms of margins," Rusche said.

But what they didn't know in the beginning was how well hybrid rye would work in the finishing cattle diets.

"What we found was No. 1, they would eat it. That was one of our first concerns. And secondly, at that one-third replacement or at about that 20% of the total diet, the performance wasn't different from the corn control, same gain, same feed efficiency, only using a feedstuff that's valued at less than what corn is in the marketplace," Rusche said.

They also saw no detrimental effects to the carcass when feeding rye versus corn. Adding rye to an operation could have many positive effects.

"I see this as an opportunity perhaps for some operations to diversify their crop rotations, provide an additional market alternative beyond the other rye markets that would include things like distilleries or bakeries," Rusche said.

Rye can also bring some benefits when it comes to the workload on an operation. You can plant it in the fall, graze it during the fall or winter or let it go for cash or feed grain. It also provides more straw and gives you another time where you can spread manure.

"What it really lets us do is within a given landmass perhaps produce more feed grain, spread out our workload to make our labor needs more efficient, spread out our machinery requirements. So we think from a whole system standpoint, incorporating rye or some other kind of small grain crop offers some advantages to help reduce risk," Rusche said.



WARREN RUSCHE Livestock Feedlot Management Specialist SDSU Extension

Rusche has been surprised by the interest he's seen from South Dakota cattle producers.

"There are some people that have adopted it as an alternative or an option with feeding corn," Rusche said.

Rye grain has to be processed.

"You definitely have to process rye grain. If you try to feed it whole, the digestibility falls off a cliff, frankly, and they just don't get enough energy off of that," Rusche said.

Rusche said some researchers with North Dakota State University Extension have used rye as a sole source of grain in feeder cattle and backgrounding diets, and it has worked well.

"It's not without some challenges," Rusche said

One of those challenges is Ergot Alkaloids.

"At high levels you can have an issue where it's not usable, so that is something that growers need to monitor and test if necessary," Rusche said.

CONTINUED ON PAGE 6

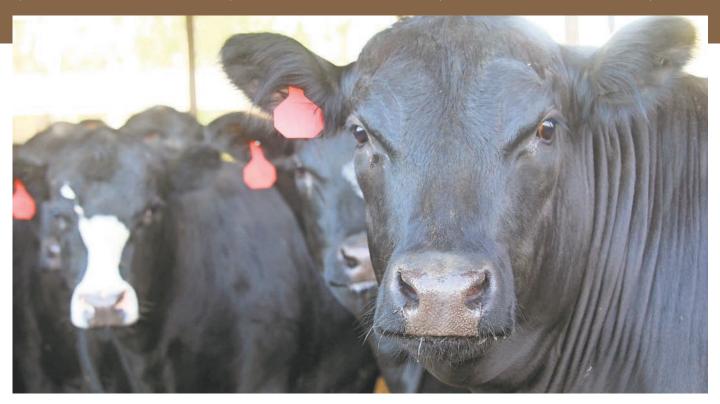


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Cattle fed rye in place of some corn showed no detrimental effects in an SDSU study. Mikkel Pates / Agweek

Rye is easier to grow than corn.

"It doesn't require quite the level of inputs that corn does. It's pretty tolerant of weather conditions outside of just absolute drought," Rusche said. "From a winterkill standpoint and a pest standpoint, rye is incredibly tolerant to a lot of things that otherwise reduce yield and productivity in other crops. It's a nice fit in some of these areas where we might have some resistant weed pressure, because there is some plant chemistry and root chemistry and things going on that suppress the weed growth."

Rusche said the best way to introduce rye into your cattle diet is to slowly add it in place of corn.

"We think there is some benefit to introducing it in smaller amounts and letting them get adapted to it," Rusche said. "We don't know if that's some kind of flavor or there's something about that that makes cattle not consume it quite as readily. We have found that with rolled rye as a sole grain source, they don't eat as much of that as they did with the straight corn diet."



A fall-planted cover crop, like this rye coming up in a Steele County, North Dakota, wheat field, can help soak up excess moisture. Poor 2019 field conditions kept many farmers from planting cover crops or doing fall tillage work. **Agweek file photo**

If you are interested in adding rye to your cattle diet, Rusche recommends feeding two parts corn, one part rye.

"As we have tried to feed greater inclusions of rye. We have seen decreased performance as opposed to that one third, two thirds," Rusche said.

Rye is suitable for any area in South Dakota where you can grow wheat.

However it should be planted with caution in areas where you are planting winter wheat.

"It's not a great fit in winter wheat areas, not because it doesn't grow, but because rye is a contaminant for winter wheat seed," Rusche said. "If you're growing a lot of winter wheat, you probably don't want to monkey around with rye just from a risk of contaminating seed and grain."

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BEEF UP YOUR SCOURS PREVENTION ON THE FARM

WITH THESE CALF-SAVING TIPS

BY MICHAEL JOHNSON | AGWEEK

Prevention is preferable to treatment when dealing with scours among calves.

Doctor of veterinary medicine and University of Minnesota Extension educator Joe Armstrong has tips for stopping scours before they can start.

Scours prevention

An operation with few cases of scours is taking steps to limit exposure of the infectious virus. So what are they doing right?

Limit bottlenecks

If there are places where calves congregate — one place they all eat, drink, sleep, and the like — you have a location for infections to spread.

This can be hard to avoid, but separating cattle into age groups can help.

Nutrition matters

The calf's mother needs to have good nutrition and health to pass that on. The calf should remain with its mother and producers should keep a close eye to ensure the calf has colostrum in the first two to four hours of life. Every hour after birth, the calf's ability to absorb the protective antibodies in colostrum decreases. That is the key nutrition that the calf needs.

If a cow rejects the calf, have colostrum replacer on hand to give to the calf. If you are unsure if the calf got any from the mother, feed it the replacer, Armstrong said.

Clean calving area

The moment the calf hits the ground, pathogens can start their work. Keep a calving area clean and dry. If your calving area is muddy, find a time of year or place where you can avoid the mud, Armstrong said.

These pathogens often spread from older cattle to calves. Limiting exposure to other cattle helps. Divide cattle up by

age group and limit the calving window to help avoid an extended period of scour prevalence. A 45-60 day calving period keeps a large majority of calves the same age within a system that minimizes disease transfer between calf age groups, Armstrong shared.

Armstrong references the Sandhill Calving System as a good one for producers to know and follow. This system operates on the principle that you move the healthy animals and leave the sick cattle in the area where they became sick. Every week or two, all cattle are moved. If scours are present, everyone moves to a clean area every week.

The first 30 days of a calf's life is where scours are most likely the concern.

After 21 days, there are other issues producers need to be watching for,

Armstrong explained.

Identify scours

Generally calves with scours will have a depressed look with drooping ears. Scours manure will have a watery consistency and will run immediately through straw bedding. Watch for calves that remain lying down when most other calves have stood up.

Binoculars can be a great tool to check on those calves on pasture. Armstrong said by the time you come close to beef calves on pasture, their natural defense is to perk up and look healthy and strong.

"They are designed to hide their sickness," Armstrong said.

Taking a look at a distance gives a better look at how they really feel.

"If you don't catch subtle signs, that calf could be dead within 24 hours," Armstrong said.

Help a calf with scours

There's a pretty small window to get to work to save a sick calf. Dehydration

is ultimately what kills calves suffering from scours. Electrolyte feedings should be given in addition to milk feedings. If you can, leave the calf with its mother whenever possible. Work with your veterinarian to decide what electrolytes to use and how often to treat, Armstrong shared.

Do not stop feeding the calf milk if bottle feeding. Leave the calf with the mother whenever possible and monitor the calf to ensure it continues drinking milk. The calf needs the nutritional value of the milk to help fight off the disease.

Always mix electrolytes according to package instructions. Feeding electrolytes that are too concentrated can make things worse by causing more scours.

What causes scours?

Scours has many causes, usually infectious but occasionally non-infectious. Rotavirus, coronavirus or Cryptosporidium cause 95% of infectious calf scours cases in calves under three weeks of age, according to Armstrong. They can also be present in combination. All calves are exposed to these pathogens. The deciding factor in whether or not a calf gets sick is often dose-dependent, meaning the more pathogen a calf receives, the more likely they are to have scours.

These infections attack the small intestine and cause diarrhea. The intestine is unable to absorb nutrients and water. Inflammation or destruction of the intestines causes discomfort for the calf.

Armstrong explained that trying to rid your cattle raising areas of viruses like Cryptosporidium is very difficult. It's extremely hardy, lasting long periods of time, and the use of bleach or water just seems to move it around. Regular cleaning, drying and lots of sunshine overtime are more likely to help.

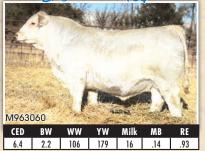


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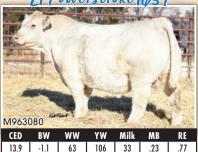
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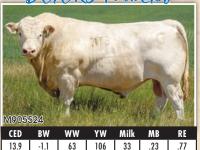




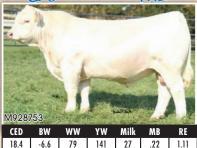
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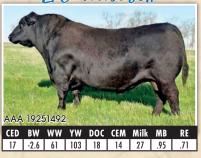
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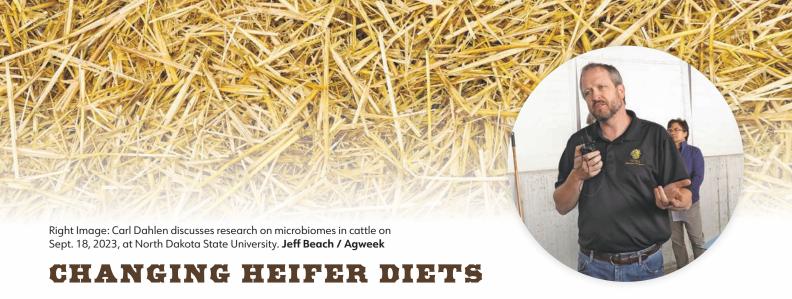
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MAY HELP THEM PASS ALONG MICROBIOMES TO CALVES

BY JEFF BEACH | AGWEEK

FARGO, N.D. — Healthy moms have healthy babies, right? But the key is in the details, possibly the micro details.

Researchers at North Dakota State University are working on how microbiomes might be transferred from a heifer to a calf, and how to increase the microbiomes for the health of both.

Different microbiomes are associated with different aspects of animal health. There are microbiomes for digestion but also for reproduction, respiration and other functions.

Studies have shown that microbiomes are associated with feeding efficiency and methane emissions.

Reducing methane emissions is not only good for the environment but emitting methane also means lost energy for the cow.

"So now the question is, can we manipulate or can we harvest the microbial community in a way that we make the cattle more efficient, and also make them more resilient against diseases? So the answer is yes, however, there's a challenge," Amat said.

The long-term goal of the NDSU research project is to develop microbiomes in cows to improve the health of them and



Samat Amat is researching microbiomes in cattle at North Dakota State University. **Jeff Beach / Agweek**

their calves to improve the efficiency of beef production.

The research will try to find out if feeding high forage or high concentrate diets can improve the microbiomes of the calves, improve feedlot performance and reduce methane emissions.

It also may be an alternative to antibiotics that are losing effectiveness because of microbial resistance.

"So the idea is this is we've just opened a new opportunity to manipulate the mom's microbiome during pregnancy so that we can have the long-term impact in calf health," Amat said. Research has shown that methane producing bacteria showing up in calves as early as 12 weeks of gestation.

"Well, there's ways that we can change how much methane a cow produces. And we can do that by shifting our diets," said Dahlen, who is working with Amat on the project.

One idea is to move heifers from a traditional diet of 75% forage and 25% concentrate and change that to a high-concentrate diet (75% concentrate and 25% forage), adding in more grain to reduce the amount of methane that's produced.

"The theory was you can change the diet from a high forage diet to a high concentrate diet, change methane production in moms, and that would result in a change in methane production in the offspring," Dahlen said.

But such a change would have other consequences.

"We know if we were to give 75% grain to these cattle and let them eat as much as they want, what's gonna happen? They will be very heavy fat heifers that probably wouldn't breed and have all kinds of problems.

NDSU has a system that can limit the feed intake. Cattle also are weighed every two weeks.

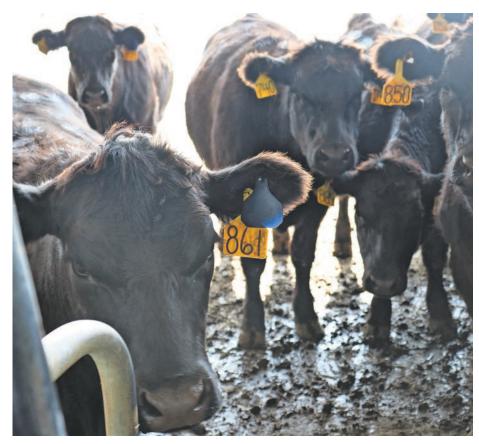
The heifers are given a target gain about 1 pound per day.

All the heifers are being bred with malesexed semen, and all the calves will be monitored as they are raised and brought up to market weight.

On a second pregnancy, at about 180 days of gestation, the cow will be killed so researchers can look at microbiome development during reproduction.

"Are calves actually getting microbiome in the uterus? It's still kind of debated," Dahlen said. "Having samples from this project, at that point in time, will allow us to definitively say, 'Yes, we have this microbial transfer.' That's our hypothesis anyway."

The U.S. Department of Agriculture awarded NDSU a \$650,000 grant for the research program, which also is supported by the North Dakota Corn Council.



These cows at North Dakota State University's beef facility are part of a study on the ability of heifers to pass along microbiomes to their calves. Jeff Beach / Agweek

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LIVESTOCK OWNERS SHOULD BE AWARE OF ANTHRAX

AND TAKE NECESSARY PRECAUTIONS TO MITIGATE IT

BY ANN BAILEY | AGWEEK

An increase in the number of cattle diagnosed with anthrax in 2023 might have cattle producers wondering if the disease will be serious in 2024.

Twenty-five cases of anthrax were confirmed in southwestern North Dakota in 2023, the last in Grant County in August 2023, the North Dakota State University veterinary diagnostic laboratory said. In South Dakota, one case involving 10 to 15 deaths was reported in June 2023 in Ziebach County. Minnesota in July 2023 had its first anthrax case in more than a decade, affecting multiple cattle and a horse.

Anthrax spores can live up to five years in the top 6 inches of soil and indefinitely in deeper soils, depending on the soil type. Warm-blooded mammals are especially susceptible to the disease, which can cause severe illness or death.

North Dakota's increase in cases from 2022 when there were none confirmed to 25 in 2023 does not necessarily mean

there will be another increase in 2024, said Dr. Beth Carlson, North Dakota deputy state veterinarian.

"Most commonly what we see is one or two cases or no cases," she said.

The disease is caused by bacteria in the soil that comes in contact with the animal, so the potential for it will depend on whether the conditions are right for the contact to be made. Animals are infected when anthrax spores are ingested, inhaled air enters a wound. It is not spread from animal to animal. The organisms mainly enter through the mouth, and occasionally enter via nose or skin injury. After the spores are ingested or inhaled, the organisms spread rapidly throughout the entire body.

It appears that anthrax occurs after an extreme weather event, such as a heavy rain, that stirs up the soil, Carlson said.

South Dakota's 2023 cases came almost a year to the day following the state's

cases in 2022, said Beth Thompson, South Dakota State Veterinarian and executive secretary of the South Dakota Animal Industry Board.

"It's interesting," Thompson said. "We think of anthrax coming to the surface, those spores coming up in the soil when we have flooding events, if there is some dirt moving that is going on in areas that have the spores further down in the soil, or in certain cases when we have drought going on. Because the livestock will graze much closer to the ground and pick up or ingest those spores."

It is rare in North America for humans to become infected with anthrax and most often occurs during a large foodborne outbreak in which many people are involved.

If a livestock owner suspects their animal died from anthrax, they should contact their local veterinarian who will take a sample from the animal that will be sent to a veterinary diagnostic laboratory for diagnosis.

If the laboratory confirms the sample is infected with anthrax, the livestock owner's veterinarian typically will notify state officials, Carlson said.

The infected dead animal must be buried or burned to prevent further contamination of the soil. If dead animals that are opened are not disposed of by those methods they provide an ideal source of new spores to contaminate the soil.

In North Dakota, the Department of Environmental Quality will assist livestock owners with choosing the best method and advise them how to do the burying or burning of the animal, Carlson said.



Dr. Beth Carlson, North Dakota deputy state veterinarian, gave a presentation about anthrax at the North Dakota Stockmen's Association convention held in September 2023 in Watford City, North Dakota. **Ann Bailey / Agweek**

Meanwhile, livestock owners who have an infected animal or animals should contact neighboring owners if they have a shared fence line. It's likely that the same environmental conditions that caused the animals to become infected are on the other side of the fenceline, Carlson said.

In areas where anthrax has been diagnosed, livestock owners are encouraged to have their cattle vaccinated, she said. In other areas, owners should talk to their veterinarians about whether their animals should be vaccinated, and if so, when the best time of year is to do that, Carlson said.

Immunity to anthrax typically begins in five to seven days. Vaccinations must be given annually for continued protection.

"If we catch it on the front end, antibiotics can help, but most importantly vaccination," Thompson said. "This is one of the vaccinations that is truly efficacious. It works well, but farmers and ranchers that are in those areas that have anthrax have to use it on a yearly basis."



Drought conditions can stir up anthrax spores, as can flooding. Jenny Schlecht / Agweek file photo

Information about anthrax and a map of cases, present and past, are available on the North Dakota Department of Agriculture website at www.ndda. nd.gov/diseases/anthrax, on the South Dakota Animal Industry Board website

at https://aib.sd.gov/cattle.html and on the Minnesota Board of Animal Health web site at https://www.bah.state. mn.us/cattle.

(Ariana Schumacher contributed to this report.) 🔤

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FROM PRECONDITIONING CALVES?

BY ARIANA SCHUMACHER | AGWEEK

SIOUX FALLS, S.D. — Weaning is a stressful time for both cattle producers and their livestock.

"There is a lot of work that goes into that time of year and with calves they are being separated from everything that they've ever known, they are no longer with mom, they no longer have milk as a source of nutrition, so they are going through a lot of life changes there," said Madison Kovarna, beef nutrition field specialist with South Dakota State University Extension.

Most cattle producers want to make sure their calves have the best start possible. One way some producers do that is by preconditioning their calves the first 45 days after weaning.

"Preconditioning allows us as producers to look into how we can push those calves to do better, reduce our incidences of illness, disease, improve in performance and ideally, the goal during preconditioning is to get them their vaccines, get them up in their health status, as well as to bunk break them," Kovarna said.

Preconditioning can cost a producer anywhere from \$35 to \$65 per head.

"It really depends on if you have those home-raised feed stuffs that you can use

to increase the value of them or if you are buying feed in," Kovarna said. "It also depends on what vaccines you are using, if you are having the space to have them at your home place or if you are kind of sending them off and having someone else do that."

While there may be some slight costs initially, preconditioning your cattle could have significant benefits in the long run.

"By getting them vaccinated, bunk broke, you might get some feedlot guys or those cattle feeders to come in and pay a premium for those calves knowing that they are going to have less problems with maybe some disease coming through. They are going to be less stressed, they are going to get on feed faster, things like that," Kovarna said.

And those premiums can be as high as \$8 per hundred weight.

"There can be those, but a lot of times it falls between that \$3 and \$5 dollars per hundredweight," Kovarna said. "They are not always going to happen like that."

Even if there is not a premium, it can make the transition easier for the livestock.

"You are not always going to see the monetary benefit, but those who sell their calves will build that rapport with those



MADISON KOVARNA Beef Nutrition Field Specialist SDSU Extension

buyers, because those calves are going to come in healthier, they are going to come in wanting to eat, and even those who decide to retain ownership, it can work really well," Kovarna said.

But preconditioning isn't for everyone, and its value can vary from year to year.

"It really is something that is hit or miss throughout the years," Kovarna said. "Really the biggest driver of why people precondition is whether they have the space, time and the feed resources available."

With record cattle prices this fall, preconditioning hasn't been as big of a priority.

CONTINUED ON PAGE 16



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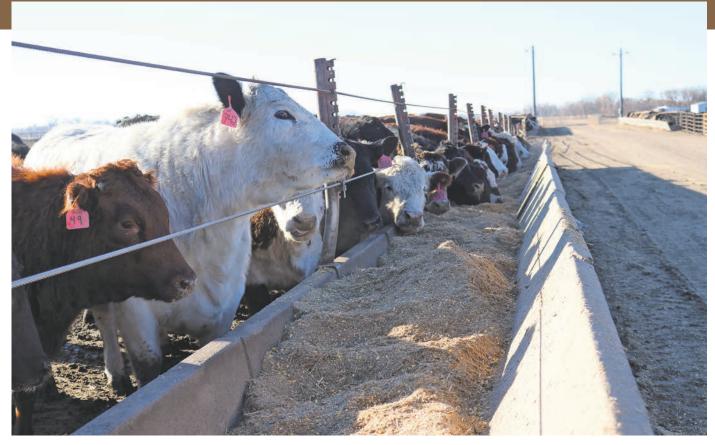
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Preconditioning can cost a producer anywhere from \$35 to \$65 per head. Emily Beal / Agweek file photo

You are not always going to see the monetary benefit, but those who sell their calves will build that rapport with those buyers, because those calves are going to come in healthier, they are going to come in wanting to eat, and even those who decide to retain ownership, it can work really well.

- Madison Kovarna

//

"People have been really taking advantage of just really getting them out as fast as they can, not hanging on to them," Kovarna said. "But at those points where the market is a little more volatile and they do want to see if they can maybe catch a little bit of a bonus for having those calves with some extra checks in the boxes, we can see more preconditioning then."

Preconditioning is something you have to plan for.

"This isn't something you just add in out of the whim. This is something you have a conversation about multiple times, not only with maybe those who are involved with your business, but also maybe some of your salespeople. If you have a nutritionist that you work closely with, that's someone you should definitely include in these conversations,"

Kovarna said.

In South Dakota, most of the preconditioning is occurring on the eastern half of the state.

"Just because we have the facilities already kind of built in to feed those calves with a lot of farmer feeders over here as well as a lot of feedlots on this side of the state," Kovarna said.

"That isn't to say that someone out west couldn't pick this up. This can be as simple as putting them in a pasture alone and being able to get them up onto feed that way, so it's a really flexible program."

In the end, preconditioning isn't for everyone; it's for you to decide based on your operation.

"Preconditioning is not a one size fits all gig for producers, you have to go through your production and go through your operation's goals and really see if it is going to be something that fits with what your goals are," Kovarna said.



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TRACING THE EFFECTS OF TRACE MINERALS

IN HEIFERS AND CALVES

BY JEFF BEACH | AGWEEK

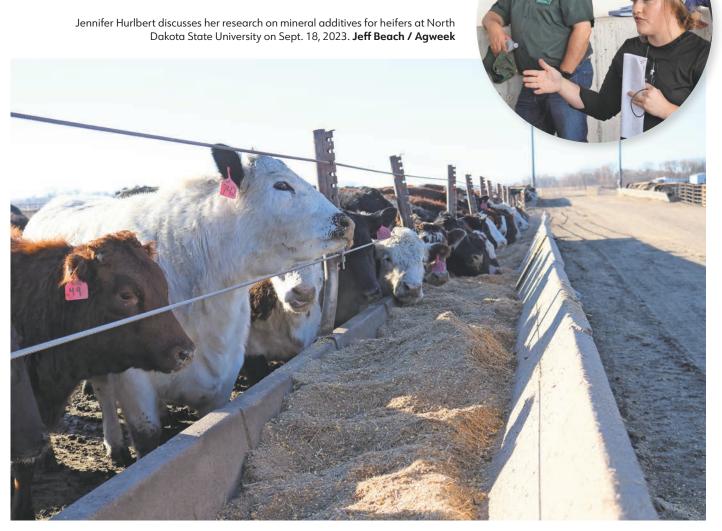
FARGO, N.D. – Heifers often are bred at the time of year when they are out grazing.

While they will get some trace minerals such as copper and zinc, would mineral supplements make for healthier cows and better performing calves?

That's what a North Dakota State University study is trying to understand with some early results showing better weight gain in calves from heifers given mineral supplements. "And so when we're thinking about these cattle, how do we feed our cattle during pregnancy is a really important piece," said Jennifer Hurlbert, an NDSU grad student.

She said trace minerals may affect things such as growth and immune functions.

"So perhaps by feeding our cows or our heifers with vitamins and minerals, perhaps we can program some of these other critical points of development in the calf during pregnancy," she said. The NDSU study started with 31 Angus heifers, with 17 of them being given a vitamin and mineral supplement as part of their ration. But the idea is to follow that calf into adulthood to understand the full effect of the nutritional supplements.



A North Dakota State University study is trying to determine whether mineral supplementation would be advantageous for heifers being bred on pasture. **Agweek file photo**

In the short term, the liver of the heifers could provide some data.

"A lot of those minerals are stored primarily in the liver," Hurlbert said.

For that reason, biopsy samples were taken from the livers of the cows at various stages of the pregnancy, starting at breeding. At calving, biopsies were taken from both mother and calf and then more samples were taken at pasture turnout, at weaning and beyond.

"We wanted to see how was the mineral status changing over pregnancy in a heifer and what does the mineral status look like in the calf at birth," Hurlbert said.

In selenium and copper, by day 84, there was a clear advantage in heifers receiving the supplement. That advantage continued throughout the pregnancy.

Especially in the heifers not receiving the supplement, copper levels declined during pregnancy.

"They just dropped and dropped and dropped and dropped all the way to calving," Hurlbert said.

Having a high level of mineral while in the uterus appears to ensure that the calf will have a high-level of minerals when it

In addition to selenium and copper, calves of heifers being fed the supplement also had higher levels of cobalt and zinc.

The research also showed a higher level of minerals in the colostrum of the heifers on the mineral supplements, and they produced more colostrum overall.

The research did not show that the study crop of calves reached puberty earlier than the control group.

After both sets of calves were born in 2021, both groups of calves – those whose mothers were given supplemental minerals and those who were not – were given nutritional supplements.

"The reason that we did this was so that we could really isolate it back to the gestational mineral supplementation," Hurlbert said.

There was no significant difference in birth weights between the two groups of calves or differences in health.

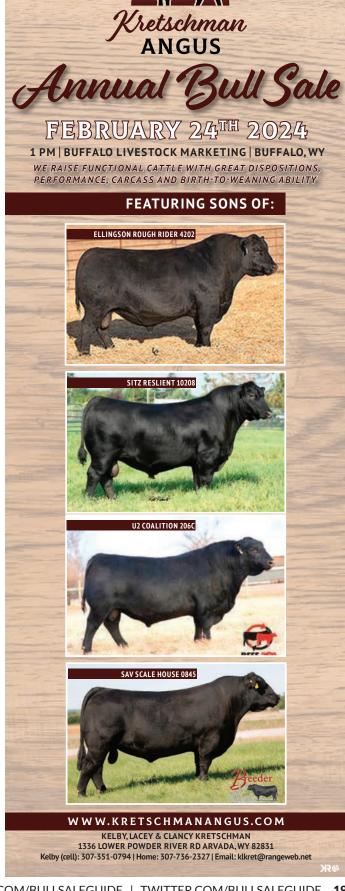
But by weaning, the calves from the mineral supplement heifers weighed an average of 36 pounds more than the control group and maintained a weight advantage in the subsequent months.

Those heifers have now been bred with hopes of tracking effects of the mineral supplements in multiple generations.

An initial report has been published and another has been submitted for review, but Hurlbert said there is more to come as data gets collected and analyzed.

Other areas are being measured, too, such as methane emissions.

"A lot more publications to come," Hurlbert said.





CATTLE BEDDING

Straw is a popular choice for livestock bedding in areas where cereal grains, such as wheat and oats, are grown. **Pixabay**

CAN TAKE A VARIETY OF FORMS

BY ANN BAILEY | AGWEEK

Studies show that a layer of bedding between beef cattle and the surface where they lie improves performance.

However, the materials used for the bedding is more a matter of what materials are available in the area in which the livestock are raised than a research science-based decision, said Julie Walker, South Dakota State University Extension livestock specialist in Brookings.

"It's using what you can get at the most economical price — that is the bottom line," she said. "Much of the bedding in eastern South Dakota is corn stalks."

That's because there are a lot of corn fields in the area and cattle producers have easy access to them.

Other plant-based bedding options are wheat, oat and other small grain straw, soybean residue and poor quality hay, according to an SDSU Extension livestock research study. The study was conducted by Keith Underwood, former SDSU Extension meat specialist, and Heidi Carrroll, former SDSU Extension livestock specialist and beef quality assurance coordinator.

Non-vegetative options are sawdust or wood chips and shavings, sand and shredded newspaper, Carroll's and Underwood's study said.

The manure hauling systems of the cattle operation also will be a factor in the



Bulls doze in a pen at Elliott Livestock and Wild Rose Cattle Co. near Clifford, North Dakota, on March 27, 2023. Bedding down is of particular importance for bulls. **Ann Bailey / Agweek**

decision of what kind of bedding to use, the study said.

Using bedding is particularly important for all cattle and particularly bulls, Walker said.

"We don't want frost damage to their scrotums," Walker said. Damaging the scrotum has potential to cause reproductive issues, she said.

Meanwhile, cows, especially those with calves, need a bedding layer to protect their udders from frostbite, Walker said.

It's also important to use bedding for cattle that will be sold for slaughter. The bedding protects the cattle from manure, urine and mud that can get attached to the hair coat and create "tags," the SDSU Extension research showed.

Dirty hair coats reduce the insulating capacity of animals, which means that they will be more susceptible to heat and cold.

The tags and unclean hair coats contain feces so it's also important from a food safety standpoint that the animals' coats - Julie Walker

are clean. Otherwise the bacteria may be transferred to meat products during slaughter.

The more mud and manure on the cattle, the more chance for the transfer of the pathogens and microorganisms, the SDSU Extension study said.

Besides improving food safety, bedding provides a warm area for animals to lie and encourages rest. The bedding also cushions the cattle from the outside ground or barn floor, protecting their joints.

Meanwhile, during cold weather, bedding insulates the animals from snow and ice, reducing their energy requirements, SDSU Extension.

The thickness of the bedding is not as important as its ability to absorb moisture, Walker said. Farmers and ranchers should ensure there's enough bedding to protect the cows from wetness when they lie down.

Though bedding down cattle may seem rote for livestock producers, it is integral to maintaining a healthy herd of animals and the individuals who consume them. The on-farm practices that help animals stay cleaner helps ensure safe meat products, the SDSU research showed.



Bedding down animals encourages rest and helps conserve energy in cold temperatures.

Jenny Schlecht / Agweek file photo



IMPLANTS CAN MEAN BIG POUNDS,

AS WELL AS DOLLARS

BY JENNY SCHLECHT | AGWEEK

Implanting calves during different production phases can mean big increases in pounds — and in dollars and cents made on a calf. But new regulations from the Food and Drug Administration mean producers need to be cautious about what products they use and how they use them.

Implants, which are natural hormones or analogues of hormones that are placed under the skin in the center third of a calf's ear, are intended to increase average daily gain and feed efficiency of cattle.

"It essentially puts gain back toward protein and muscle development and away from fat deposition," explained Zac Carlson, beef cattle specialist for North Dakota State University Extension, during a December webinar on backgrounding cattle.

During the webinar, Carlson laid out the case for using implants and explained some issues for producers to consider.

Implants have been approved for use in cattle since 1956 and have been consistently studied ever since, Carlson said.

"They've been probably the most researched technology thus far in beef cattle," he said.

Studies have shown that the proper use of implants can lead to 10-15% higher average daily gain and 8-12% higher feed efficiency. Carlson showed results of trials showing that cattle on different types of implants gained about 30 more pounds during a 140-day feeding period than cattle that were not implanted. Assuming a market at \$2.30 per pound and using a \$4 implant, that means \$65 per calf gain from using an implant.

Carlson said more than 90% of feedlot cattle are implanted at least once in their lifetime, and a study of cattle sold on Superior Livestock Auctions did not show a significant difference in prices for cattle that were implanted versus those that were not. He said some non-implanted cattle that are certified natural or organic may bring a higher dollar, but the runof-the-mill calf will not bring a vastly different price.

"If you're not capitalizing on some valueadded program, such as using implants, you certainly want to take advantage of one of those avenues," he said, referring to programs like natural and organic certification.

Potential problems

There are problems that can arise in using implants. For one, the implants need to be properly inserted in the middle third—both horizontally and vertically—to work and need to be in a place where they will not get crushed, Carlson said. Additionally, he explained that it's important to properly sanitize the needle between calves to avoid pushing dirt, blood or hair under the skin with the implant, which could lead to infection. For that matter, implanting during a rain event also is ill-advised because of the potential for dirty water to wash in with the implant.

Using incorrect implants – such as starting at too high of a dose with a calf – also can mean less of a return on the investment.

"You start at a moderate or a weaker dose and you work toward higher concentrations as that calf moves through its growth," he said. "It's important not to go too far too fast."

In backgrounding steers, estrogen only or "mild combination" implants are appropriate, while in backgrounding heifers, estrogen only, "mild combination"



Implanting feeder cattle can lead to significantly higher average daily gains and feed efficiency. Jesse Campbell / Grand Vale Creative LLC



Cleaning and sanitizing needles during the implant process is vital in avoiding infection in cattle. Contributed / South Dakota State **University Extension**

and "moderate combination" implants can be used.

Implants are effective for 60 to 100 days, so Carlson said it's important to not "run out" of implant while owning cattle. However, new federal regulations have changed how cattle can be implemented throughout their lifetime.

If the middle of the ear has been dama place implant on the top of the ear.

If the tip of the ear has been damag implant in the outer 1/2 of the rema Implants should be placed in the middle third of the ear, both horizontally and vertically.

Contributed / NDSU Extension

Carlson explained that FDA

rules put in place in July – Guidance for Industry 191 – added a new production phase for cattle, referred to as "growing beef steers/heifers in a dry lot." The rules also limited reimplantation during a production phase to products specifically labeled for use more than once during a production phase.

Part of the complication of that rule is that backgrounding and finishing are not considered by the FDA to be different production phases. Carlson said producers need to be careful about when they implant and what products they use in light of the new rules.

Out of 27 approved implants, only four – Encore, Compudose, Synovex Choice and Synovex S – can be used for reimplantation. Carlson said more products are expected to get new labels and be approved for reimplantation, but so far, those are the only options.

The regulations also follow the animal and must be followed even if the cattle change location or ownership, Carlson said.





An Angus bull out at pasture. Addison Magill / Real Ag Stock

IS IT TIME

TO CULL THE BULL?

BY MICHAEL JOHNSON | AGWEEK

Knowing when to replace a bull in your operation can have wideranging benefits.

While bulls can live 10-12 years, it's not uncommon for bulls to be taken out of the breeding game at just 5 years due to feet, leg and fertility issues, temperament or injuries.

All of those are fair reasons to look for new genetics to add to the herd. according to Dr. Timothy Goldsmith, a doctor of veterinary medicine and professor in the ruminant division at the University of Minnesota.

Goldsmith suggests cattle producers take a close look at their bulls' batteries. Age and capacity have important implications.

Goldsmith said that a bull is able to breed about as many cows as their age in months. So once a bull is fertile, if they are 12-15 months old, consider that a bull may be able to breed 12-15 cows. That number peaks at around 25-30 cows with a 3-year-old bull. Of course, that bull's coverage capacity varies depending on if the herd is out on the range or in a small setting. Don't overestimate the ability of the bull, but if they are not providing basic coverage, consider culling that bull.

"So just understanding their battery and capacity, and whether they need



If you're on the fence about keeping or replacing a bull in your herd, there are many things to consider.

Cinnamon Lenhart / Real Ag Stock

additional bulls is the first step when it comes down to that question of replacing a bull," Goldsmith said.

Other issues come on with an aging bull.

As a bull ages, you may find that it's becoming too large to get the job done, or even if they are able to do so, they may be large enough to injure the cows.

"Some bulls may be too physically large for breeding," Goldsmith said.

A big, shiny bull is pretty, but an abundance of fat on a bull, especially on the neck and scrotum areas, means the bull can have issues regulating heat and producing sperm.



DR. TIMOTHY GOLDSMITH

Veternarian and Professor in Ruminant Division University of Minnesota

Also with age can come leg and feet issues. If those issues of lameness come on at just a few years of age, the bull is not only going to have issues with passing on genetics, but it may be passing genetics that you don't want in your herd.

Herd size is another consideration. Producers with a smaller herd are more susceptible to issues arising from inbreeding if a bull is kept for too long.

"If you're keeping your own replacement heifers and you only have one or two bulls, you may be breeding the sire back to the daughter," Goldsmith said. In that case, you may need to replace bulls more often than a larger operation, with more bulls on the job.

Goldsmith shared that many producers start to depreciate their bulls at about age 5. Producers must consider the cost they paid for a bull to determine if the bull has paid for itself. However, no matter the price, if the bull is producing undesirable traits, replacement is important, as he can easily leave an impact on decades of cattle beyond his time.

"Genetics evolve pretty quickly. That bull that's 5 years old, is he as good genetically as a younger bull you can get? And is it time to upgrade your genetic target or have your genetic goals changed?" Goldsmith said, describing things to consider.

A bull that's not pulling his weight is going to cost you over the many months you keep him around.

Research from the University of Wisconsin-Madison shows that an 1,800-pound bull will eat about 2% of its body weight each day in dry matter. That's about 36 pounds of dry matter each day, including the nine months or so outside of the active breeding season.

The same paper notes that a bull contributes about 90% of the gene pool, having more genetic contribution in one year than a cow will have in her whole life. The University of Minnesota says "while cow families and pedigrees are incredibly important, sire selection usually makes up more than half of the equation in terms of genetic progress."

"The bull you purchase today is going to impact the genetic makeup of your cow herd for the next 20 years," Goldsmith

said. "So I think that bull makeup is incredibly important."

What you want out of your bull can vary from producer to producer. However, a 2020 survey that Goldsmith referred to from the American Angus Association highlights what was most important to that group.

- No. 1 was cow survival.
- No. 2 was docility. "Any time a bull is belligerent or has a docility

problem is a great reason to consider replacing and should be really high on everyone's list," Goldsmith said.

- No. 3 was foot score. "I could make the argument that a bull that is structurally sound is more likely to produce heifers and then cows that are more likely to have sound feet and leg structures that contribute to their longterm stability in the herd."
- No. 4 was heifer preference.





Problem bulls can lead to injuries to humans and other animals and should be culled. Jenessa McLean / Grand Vale Creative LLC

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US-UK COLLABORATION WILL STUDY VIRAL TRANSMISSION

DURING CATTLE COMMINGLING EVENTS

BY NOAH FISH | AGWEEK

Experts from the University of Minnesota College of Veterinary Medicine along with collaborating institutions in the United States and the United Kingdom will study the transmission of viruses during commingling events — when unfamiliar animals or people come together in a defined space and time with intensive and sustained contact.

Researchers from the University of Minnesota, Texas A&M University, Mississippi State University and the University of Liverpool will work to untangle these dynamics, using \$3.5 million in funding from the United States Department of Agriculture National Institute of Food and Agriculture, the National Science Foundation and the Biotechnology and Biological Sciences Research Council.

The lead investigator for the project is Noelle Noyes, an associate professor in the Veterinary Population Medicine Department in the College of Veterinary Medicine at University of Minnesota, whose recent work focuses on respiratory disease and microbiome in cattle.

The University of Minnesota is the lead institution for the project, and Noyes led the writing of the grant and assembled the team of institutions that will contribute to the research.

"A unique aspect of this work is the integration of microbiome dynamics into models of virus transmission at the population level," Noyes said. "There's a lot of scientific evidence about the importance of the microbiome in individual health, but we don't have as much understanding of how population-level microbiome dynamics may influence pathogen transmission, particularly

during situations of heightened disease risk, such as commingling."

What is commingling?

In beef production, the most common commingling event is when animals are brought to the feedlot, Noyes said.

"The cattle are raised as babies into sort of juvenile age on all of these different ranches across the U.S., and usually in smaller herds," Noyes said. "When they go to the feedlots, they're brought on trucks — maybe through an auction market or maybe just directly to a feedlot. And when that happens, they're brought together in sort of a very abrupt way."

When cattle suddenly have close exposure with animals they've never been in contact with before, it's considered a commingling event.

"It happens across pretty much all livestock species," Noyes said of commingling.

The latest commingling project is new but Noyes said the University of Minnesota has done research involving cattle commingling, microbiome and infectious diseases via virus transmission throughout the five years she's been at the university.

Respiratory disease is a major concern when it comes to commingling events, Noyes said.

"In cattle, it's interesting, because it's not just viruses, it's also bacteria in the respiratory tract that can make them sick, and they sort of feed off one another—the viruses and the bacteria," Noyes said.

She said there's several viruses that can be associated with respiratory disease in cattle.



NOELLE NOYES
Associate Professor in Veterinary
Population Medicine
University of Minnesota

"One of them is bovine coronavirus, which is what we're focusing on in this new project," she said. "There are others, as well, that are specific to cattle, and there's a bacteria called mannheimia haemolytica that is also involved in cases of respiratory disease."

Metagenomic and immunological data

Using metagenomic and immunological data along with advanced modeling techniques, researchers will uncover organizing principles of infectious disease transmission during commingling.

"We hope to uncover the complex multilevel mechanisms that underlie viral transmission during intensive mixing of unfamiliar calves," said Joe Neary, principal investigator of the project's UK activities.

The findings will have "immediate ramifications for livestock husbandry practices and will advance theoretical understanding of virus behavior for future research," according to a press release announcing the project.

Noyes said that metagenomic data is a somewhat new kind of way to look at microbes like viruses and bacteria.

CONTINUED ON PAGE 28

Joint Production Sale

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Tom and Meghan Schnabel / 605-380-2811 - 605-577-6286 www.srsimms.com "Instead of just trying to find one specific virus or bacteria in the respiratory tract or any sample, we actually look at all the microbes in the sample," she said.

She said by using metagenomics to look at the microbiome of the respiratory tract, the research will highlight all the good bacteria as well as the potentially bad.

"Our hope is that we actually identify some good bacteria in the respiratory tract that protect animals against transmission of viruses like bovine coronavirus and actually protect their health during commingling," Noyes said.

Separate from the metagenomic data, the immunological data in the project will examine how the animal itself is responding during commingling, Noyes said.

"How is its immune system responding to pathogens and other bacteria in the respiratory tract when they get commingled?" Noyes said. "So we're also hoping to find signatures of the immune system response that would protect the animal and protect its health during commingling."

Results

Noyes said the project is currently just in the starting phase.

"It's a big project, and we've got animals enrolled in the UK, and we're getting them enrolled here in the U.S.," Noyes said. "We will be following them over time during these various commingling events and getting samples and all that."

She said it will probably be at least a year or two until some initial data is received and around three years until a full data set is ready.

"There's a magnitude of a project with all of these components, with the virus immunology and metagenomics, and we have to have tons of experts on the team," Noyes said. "That's the coolest part right now for me, because we don't have results yet, is that I get to work with this diverse team of experts across the world, which is really fun."



Research from various parts of the United States and the United Kingdom are working together to look at how viruses are transmitted during commingling events in cattle.

Mikkel Pates / Aqweek file photo



When calves leave their birthplace and head to a sale barn or a feedlot, that's a major commingling event. Research by a variety of institutions will look at how commingling events impact cattle health and ways to cut down on problems.

Julie Laird / Grand Vale Creative LLC

SOUTH DAKOTA ONE OF FOUR STATES

TO OFFER WEANED CALF RISK PROTECTION INSURANCE

BY ARIANA SCHUMACHER | AGWEEK

SIOUX FALLS, S.D. – The U.S. Department of Agriculture's Risk Management Agency is launching its Weaned Calf Risk Protection Insurance in four states in 2024: South Dakota, Texas, Nebraska and Colorado.

"Basically, we are going to be covering calves that would die early before weaning due to some type of storm-type situation. Adverse weather conditions is No. 1 on the top of the list," said Heather Gessner, South Dakota State University Extension livestock business management field specialist.

It doesn't cover calf loss under every circumstance.

CONTINUED ON PAGE 30



The U.S. Department of Agriculture's Risk Management Agency is launching its Weaned Calf Risk Protection Insurance in four states in 2024: South Dakota, Texas, Nebraska and Colorado. **File photo**





"Say you have a momma cow, and she stomps all over her calf after it's born—that one doesn't count. That's not a covered loss. But if you have drought, major blizzards and those types of things, or a rainstorm for five days when it's 32 degrees, adverse weather that causes situations like that," Gessner said.

Other things included in Weaned Calf Risk Protection Insurance are calves lower in weight than a producer's average production and changes in the futures market.

"So, we are utilizing the November futures market again, very typical to corn or soybean insurance products," Gessner said.

Since it is the first year this product is offered, there are still some things that might not run smoothly.

"Some of the reporting components of it at this point look kind of clunky because in order for calves to be covered they have to be born and verified and reported with your crop insurance agent," Gessner said. "So if we are in the middle of a three-day blizzard and it's hard to find those cows that are calving — let alone see and get them into the barn — you think about some of the April storms in 2018 and 2019 that we had where people couldn't even get to their cattle operations and see what's being born. That's where it might be a little tricky in some of those types of things."

But Gessner sees several potential benefits to this new insurance.

"I think it has some huge potential for that risk side, you know, based on disasters like that blizzard or the drought came through and our calves weighed 150 pounds less because the cows



Under Weaned Calf Risk Protection Insurance, producers need to let crop insurance agents know of new calves promptly.

Mikkel Pates / Agweek file photo

weren't milking and there wasn't enough grass for them to eat and make up that weight from a forage standpoint. So it does provide some of that reassurance," Gessner said.

This new insurance works as a risk management tool and won't be the perfect fit for every cattle operation.

"Make sure that you are thinking about this as a risk management tool. Not all tools fit for every operation, but really evaluate it and determine your risk level and see where it fits into your operation and if it does, awesome. If it doesn't, pass on it and find something else that works better for you to watch that bottom line of your calf crop coming up in 2024," Gessner said.

If you don't end up having to use the insurance, that's a good thing.

"Just like buying car insurance, we buy car insurance, and we hope we never have to use it. If we buy this insurance and at the end of the year when we put in our final



HEATHER GESSNER Livestock Business Management Field Specialist SDSU Extension

reports and tallies and we don't get paid, that means good things happened all year," Gessner said.

This program will take some time to expand to other states.

"We've got a lot of calves that are born in those four states every year. So if we get some decent producer numbers turning in data and reporting, everybody from the smaller producers to the really big guys, you know, the more data that they have for this first year running through, we've got a better chance of it opening up for more states quicker" Gessner said. "If I had to guess I'd say it would be a two- or three-year kind of slow trickle out."

Jan. 31 is the final sign-up date for this program.

"Talk to your crop insurance agent to make sure they are selling the product. Not every agent might pick up this product as a risk management tool, just because of the short turnaround time from the time they got the information from the time everything was going to roll out," Gessner said.

PRICE PROTECTION, BACKGROUNDING HEIFERS AND OTHER MARKET LESSONS

BY JENNY SCHLECHT | AGWEEK

Cattle prices have been high, and market factors would indicate that they'll stay high. But Tim Petry, North Dakota State University Extension livestock economist, says that doesn't mean price protection isn't necessary.

"When we are at record high prices, volatility is also high, as we've seen," Petry said during an Extension webinar in early December on backgrounding cattle.

Petry walked through the fundamentals of the cattle markets and how risk protection options can help reduce some of that volatility for cattle producers.

Using charts to illustrate, Petry showed how the feeder cattle market had – propelled by low cattle numbers, low feed costs and high fed cattle prices – rocketed to new all-time highs in September before falling off. But the falling off, he said, was entirely predictable. September is the typical time for high futures prices for cattle, and the prices have to fall off to meet cash prices at the end of contracts.

But that big drop was also a prime example of why cattle producers need to protect their risk. Buying or keeping highpriced calves in the fall and banking on high prices down the road can be a dangerous proposition, financially speaking.

Petry said using either the U.S. Department of Agriculture's Livestock Risk Protection Insurance or futures market options can help protect against major market slides. Those particular moves allow producers to "lock in a floor price and then leave the top side open," which can make sure a producer at least breaks even on cattle.

"Protection is just a cost of doing business," he said.

Petry showed examples of LRP contracts, which change in price and value every day as the market moves. He explained the insurance is a protection mechanism that can cut some risk, not a sure-thing to make money. Paying more for a contract provides a higher "floor," but less expensive contracts can provide adequate coverage, too.

"It's all between you and your lender, what's your risk exposure," he said.

For more information on Livestock Risk Protection, including where to buy it and how it works, visit https://www.rma.usda. gov/en/Fact-Sheets/National-Fact-Sheets/Livestock-Risk-Protection-Feeder-Cattle.

CONTINUED ON PAGE 32

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Ellingson Honor L313 ASA# (4219424) CE BW WW YW ADG MCE MM MWW MB REA \$API \$TI 10 .9 91 143 .32 6 30 75 .35 1.23 154 93 Adj. WW: 831 lbs. Adj. YW: 1,551 lbs.



Ellingson Vanderbilt L322 ASA# (4219497) YW ADG MCE MM MWW MB REA \$API \$TI .27 .94 124 96 Adj. WW: 876 lbs. Adj. YW: 1,594 lbs.



Ellingson Guardian L327 ASA# (4219487) YW ADG MCE MM MWW MB REA \$API 179 39 6.2 31 Adj. WW: 832 lbs. Adj. YW: 1,319 lbs.



Fllingson Vuma I 328 ASA# (4219415) CE BW WW YW ADG MCE MM MWW MB REA \$API \$TI .74 105



Ellingson Net Income L363 ASA# (4219451) CE BW WW YW ADG MCE MM MWW MB REA \$API \$TI 7 2.8 94 151 .36 4 26 73 .14 1.21 131 87 Adj. WW: 834 lbs. Adj. YW: 1,450 lbs



Ellingson Cowboy Logic L373 ASA# (4219419) BW WW YW ADG MCE MM MWW MB REA \$API \$TI 3 97 151 34 7 23 72 22 99 143 90 Adi, WW: 788 lbs. Adi, YW: 1,404 lbs



Ellingson Black Ice L3036 ASA# (4241435) CE BW WW YW ADG MCE MM MWW MB REA \$API \$TI 12 2.9 100 160 .37 8 24 74 .47 1.04 162 99 .47 1.04 162 99 Adj. WW: 694 lbs. Adj. YW: 1,364 lbs.



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Protection is the cost of doing business.

- Tim Petry

Petry expects the cattle market to remain strong, given the fundamentals that made it strong this year are expected to continue into the next year. Corn prices remain low, the futures market for fed cattle remains high, and the cash crop for next year will still be short given how many cows have been taken out of the U.S. herd in recent years. But no matter the outlook, price protection remains important because of the possibilities of market disruptions of all sorts.

"I still encourage price risk management, particularly on a seasonal basis like backgrounding or summer grazing," he said. "There's always risk."

Backgrounding heifers

When deciding what kind of cattle to background, Bryon Parman, NDSU Extension ag finance specialist, and Petry said it's important to look at budgets. Parman presented various scenarios for different types of cattle at different weights and compared the potential per-head gains on them.

At weaning, heifers are significantly cheaper than steers, Parman showed. That's a difference that has been consistent over multiple years. However, after the animals reach the 850 to 900 pound area, that difference is pretty much gone.

"Backgrounding heifers or even going all the way to finishing eliminates price gap between steers and heifers, which is at its highest at weaning," he said.

Comparing the various scenarios of feeding steers with low average daily gain targets or high average daily gain targets along with feeding heifers with low average daily gain targets or high average daily gain targets, Parman said taking heifers from 525 to 805 pounds in 100 days has been a consistent winner over recent years.



Backgrounding calves from weaning to a heavier weight can be a good way to add value, but it's important to budget and manage risks, NDSU Extension economists say.

Julie Laird / Grand Vale Creative LLC

"Every time that I do it, whether it's a leaner year or a stronger year, this tends to be the most profitable scenario," he said. "The heifers are the ticket right now."

Parman backed up Petry's insistence on market protection, too, showing that feed costs could increase substantially before heifers would be a money-losing proposition, but the market only has to go down about 10% before the gains are wiped away.

"That would be an absolute disaster," he said.

Petry said backgrounding heifers also leads to another possibility for cattle producers. With many parts of the country that have experienced drought in recent years, including parts of the northern Plains as well as places like Oklahoma, Texas and California, seeing some moisture in the past year, it's likely that some ranchers will be looking

to expand their herds after years of cutting back.

"Replacement heifers are going to be at a premium," Petry said, explaining that even if conditions change and no one is looking for replacement heifers "we can sell them as feedlot heifers and we've added value."

In either case, it's worth looking at heifers when considering what kind of cattle to feed.

"Budgeting shows we make good money on heifers," Petry said.

He said that's not to say that there isn't money to be made on some steers, as Parman also showed in his scenarios. It's just that there's less room to work given high steer prices at weaning. Petry also cautioned that overly fleshy steers take a hit in the market when selling after backgrounding, so don't put "too much groceries in them."

VIRTUAL FENCES MOVE

WITH A FINGER AT **CENTRAL GRASSLANDS** RESEARCH **EXTENSION CENTER**

FIELD DAY HIGHLIGHTED LIVESTOCK TECHNOLOGIES. CONSERVATION PROJECTS, GRAZING RYE COVER CROPS BEFORE PLANTING SOYBEANS, AND CONTROLLING NON-NATIVE GRASS SPECIES

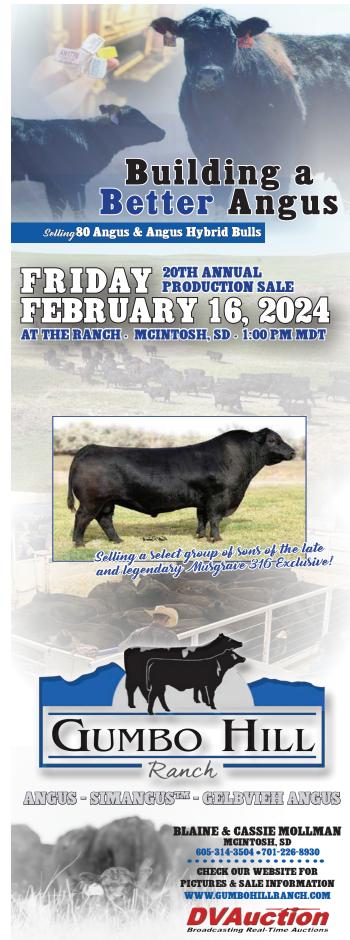
BY JENNY SCHLECHT | AGWEEK

Imagine if all fencing entailed was a click on a computer screen. Technology is making it closer to a reality, though researchers are still working to determine the best application for virtual fencing.

Miranda Meehan, Extension livestock environmental stewardship specialist, and Zac Carlson, Extension beef cattle specialist, at a July event at Central Grasslands Research Extension Center in Streeter, North Dakota, demonstrated virtual fencing, which has been in use for just more than a month at Central Grasslands at that time.



Cattle in a virtual fence system are wearing collars that alert them when they are near the border of their fence. NDSU Extension researchers say the system has worked well so far, and a line of grazed grass and taller grass shows where the invisible barrier lies. Photo taken July 10, 2023, near Streeter, North Dakota. Jenny Schlecht / Agweek



Virtual fencing is not necessarily new technology, but several companies are working to make the systems more effective on pasture. In the Vence system that Extension is using, cows wear collars that connect to an invisible barrier. When they get close to the barrier, they hear a beeping sound. When they go beyond the barrier, they get a shock, similar to that from an electric fence.

As Meehan and Carlson explained how the system works, the cows in the pasture showed it in real time. The pasture was clearly eaten down at an invisible barrier, with taller grass on one side and shorter grass on the other. As the cows approached the barrier, a constant "beep ... beep ... beep" could be heard coming from their collars. Meehan explained that the cows went through a training system that taught them that the beeping would be followed by a shock if they went farther.

Carlson said the ease of moving the "fence" was a big advantage for the system.

"You can set your boundaries right wherever you want. So you can move that fence with the click of a button or with the move of a finger, on a phone or on a computer," he said.

The cost of the system Extension is using includes more than \$10,000 for setting up a base, along with an annual lease payment on each collar. Other systems use cellular technologies instead of a base. Carlson said whether the system is cost effective will be different for different operations when compared to traditional fencing.

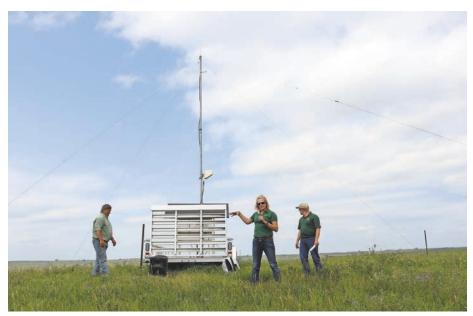
In about a month of use, NDSU Extension has found that the virtual fencing might not be ideal for a perimeter fence but works well as a cross fence for rotational grazing. It also can be used to keep cattle out of an area, such as keeping them away from bacteria-infected water.

"Do we trust it as perimeter fence? Probably not. But it's really a cool tool to be able to manage those animals within a grazing system," Meehan said.

Carlson and Meehan also this fall started using a virtual fence system in a project on strip grazing cover crops to exclude cattle from portions of the field. Kevin Sedivec, director at Central Grasslands, said virtual fences also may be of use as a way to do intensive grazing throughout a pasture. Other research already underway at the center is looking at how grazing systems compare to patch burning as a method of restoring native plants, and virtual fence could be another option to consider, he said.

Meehan, Carlson and Sedivec will be sharing initial findings of their research in the spring of 2024 through NDSU Extension Cafe Talks, social media and other outreach efforts.

The research was funded through a U.S. Department of Agriculture agreement on precision agriculture and with grants from the North Dakota State Board of Agriculture Research and Extension and the North Central Sustainable Agriculture Research and Education program. The research will continue through 2026 through collaborations with the University of Nebraska-Lincoln.



The base tower for the Vence system in use at Central Grasslands Research Extension Center costs \$10,000, if producers do installation themselves. From left, Kevin Sedivec, Miranda Meehan and Zac Carlson explained the system during Central Grasslands Research Extension Center's field days on July 10, 2023. **Jenny Schlecht / Agweek**



Zac Carlson, left, and Miranda Meehan explained the Vence system in use at Central Grasslands Research Extension Service on July 10, 2023, near Streeter, North Dakota.

Jenny Schlecht / Agweek



Joe Armstrong, University of Minnesota Extension educator in cattle production, teaches a Beef Quality Assurance class on Nov. 3, 2023, at Lanesboro Sales Commission in Lanesboro, Minnesota. Noah Fish / Aqweek

BEEF QUALITY ASSURANCE

SPARKS DISCUSSIONS, OPENS UP MARKETS FOR PRODUCERS

BY NOAH FISH | AGWEEK

LANSEBORO, Minn. – On the morning of Nov. 3, as trailers filled with animals lined up outside of the Lanesboro Sales Commission, a group of about 20 cattle producers took part in a training meant to make them better beef handlers.

Joe Armstrong, University of Minnesota Extension educator in cattle production, taught the Beef Quality Assurance program, which provides those who work with beef cattle the opportunity to learn more about best management practices, herd health and animal stewardship. The training is meant to create a better quality beef supply and increase consumer confidence.

Before joining the university four years ago, Armstrong worked at Anderson Veterinary Services in Zumbrota, Minnesota, handling dairy and beef sale barns. He's been teaching BQA trainings for three years.

Minnesota Beef Council has an agreement with Extension to help teach the program across the state and through webinars.

"The overall goal for BQA is to make sure that we have a quality product that gets delivered to the consumer, and everyone's on the same page," Armstrong said. "And make sure people know they can call me if they have questions, but also to use it as a platform to kind of impart some other knowledge that would allow us to have a baseline knowledge, hopefully across the state for production and improvement."

The feedback Armstrong gets is mixed. He gets some angry phone calls from people who feel like they are being forced to take the class.

"My goal is to just help people navigate the current rules that I don't control," he said.

But he also hears from people who are happy the presentation is laid back and different than it has been in the past.

"It's not the same as it's been for the last 10 years," Armstrong said of BQA.

Packers buying from sellers are the ones requiring the training to take place.

"The packer is really the group that has decided that it's mandatory," Armstrong said. "So if you don't want to sell to a big packer, you don't have to do it."

Not participating in the training will narrow a seller's market, he said.

"We're trying to make it so that there's at least a couple of slides or a couple of things that spark discussion and keep people thinking about improving," Armstrong said.

That's the goal of the treatment protocol that Armstrong goes over in the training. Is the protocol a one-sizefits-all for every operation? No, but it will fit most operations, he said, and it gets people talking.

Producers need to participate in only one training option to become BQA certified, and only one person from each operation is required to be certified to ensure the entire operation follows the BQA standards. Certification is good for three years.

Each state has a Beef Quality Assurance training program. For more information, visit https://www.bqa.org.

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